GEOS-5 system requirements

System Requirements

The following compilers and utilities are required for compiling, linking and running the GEOS-5 AGCM:

- Fortran90 (or later) compiler;
- C compiler
- MPI (or MPICH) implementation compatible with the above compilers
- GNU make
- Perl - to run some scripts
- LATEX - to produce documentation

Supported platforms

GEOS-5 has run on the Origins and the Compaq and currently runs on the Altix (COLUMBIA [1]), and Linux clusters (DISCOVER [2]). It it currently being built on MAC OS X (SENSORWEB [3]) and IBM POWER5 (SCHIRRA [4]).

Platform	OS	F90 compiler
PC Pentium III	Linux	lahey
PC Pentium III	Linux	pgi
PC Xeon(32) Cluster	Linux	absoft
PC Xeon(32) Cluster	Linux	nag
SGI Altix	Linux	intel
MAC	Darwin	intel
IBM POWER5	AIX	default

GEOS-5 Environment Variables

The GEOS-5 build system provides the mechanism to set most environment variables to produce and run the AGCM executable. However the following is a list of environment variables that generally need to be set by the user:

The environment variable BASEDIR sets the path of the Baselibs. Baselibs are a set of support libraries (ESMF, HDF, netCDF, etc) that need to be installed before attempting to build the GEOS-5 AGCM application. There are different version of Baselibs installed on DISCOVER (installation of Baselibs is discussed in Building Baselibs) and at least one version on COLUMBIA. Generally these will be set automatically by the GEOS5 build mechanism.

DISCOVER

BASEDIR=/usr/local/other/baselibs/ESMF220rp2_NetCDF362b6_9.1.052

COLUMBIA

BASEDIR=/u/trayanov/baselibs/v2_2rp2

SENSORWEB

BASEDIR=<NOT AVAILABLE>

SCHIRRA

BASEDIR=<NOT AVAILABLE>

The environment variable LD_LIBRARY_PATH is a colon-separated set of directories where libraries should be searched for first, before the standard set of directories. On the MAC this variable is called DYLD_LIBRARY_PATH

LD_LIBRARY_PATH=${LD_LIBRARY_PATH}:${BASEDIR}/Linux/lib

For post-processing (if using GRADS):

GADDIR=/usr/local/other/GrADS/1.9b4/lib

Memory, disk space and simulation time limitations

Users can customize the GEOS-5 AGCM to suit their own research needs. The AGCM can be run at four different resolutions on multiple combinations of platforms, compilers, and operating systems. Furthermore a user can select one of several HISTORY output streams. This provides obvious benefits to researchers, but also presents a challenge when trying to quantify requirements such as memory, disk space, and simulation times.

For this reason, detailed documentation of such requirements is beyond the scope of this document. The following summary of the requirements from a 2.5x2 degree model run at NCCS on the Linux cluster DISCOVER may provide the user with a general idea of model requirements:

- Run Length: one season
- Resolution: 2.5x2 degrees
- History-File Volume: 26 Gbytes/model season
- Restart-File Volume: 4.1 Gbytes/model season
- Total CPUs: 32
- Simulation Years/Day: 8

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[1] NAS systems

[2] NCCS systems

[3] sensorweb.sci.gsfc.nasa.gov

[4] NAS IBM

Next: Building Baselibs for GEOS

Up to: Building and Installing the GEOS-5 AGCM

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